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IS 13208 (1991): Tannic acid for ink industry [CHD 14: Printing, Inks, Stationary and Allied Products]



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भारतीय मानक

स्याही उद्योग के लिए टैनिन अम्ल — विशिष्ट

Indian Standard

**TANNIC ACID FOR INK INDUSTRY —
SPECIFICATION**

UDC 667.4 : 661.734.2

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BUREAU OF INDIAN STANDARDS
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NEW DELHI 110002

FOREWORD

This Indian standard was adopted by the Bureau of Indian Standards, after the draft finalized by the Stationery and Allied Products Sectional Committee had been approved by the Chemical Division Council.

Tannic acid is one of the important ingredients in writing inks, based on ferro gallo tannates. This standard has been formulated with a view to have uniformity in the quality of this product.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TANNIC ACID FOR INK INDUSTRY — SPECIFICATION

1 SCOPE

This standard prescribes the requirements and the methods of sampling and test for tannic acid used in ink industry.

2 REFERENCES

The Indian Standards listed below are necessary adjuncts to this standard:

<i>IS No.</i>	<i>Title</i>
170 : 1966	Acetone (<i>third revision</i>)
229 : 1972	Ethyl acetate (<i>second revision</i>)
266 : 1977	Sulphuric acid (<i>second revision</i>)
323 : 1959	Rectified spirit (<i>revised</i>)
1070 : 1977	Water for general laboratory use (<i>second revision</i>)
4905 : 1968	Methods for random sampling.

3 REQUIREMENTS

3.1 Description

The material shall be in the form of lustrous, faintly yellowish amorphous powder, which darkens when exposed to air.

3.2 Identification

The material shall pass the identification tests, when tested as prescribed in Annex A.

3.3 Solubility

The material shall be completely soluble in water (*see* IS 1070 : 1977), rectified spirit (*see* IS 323 : 1959), acetone (*see* IS 170 : 1966) and ethyl acetate (*see* IS 229 : 1972).

3.4 The material shall also comply with the requirements given in Table 1.

4 PACKING AND MARKING

4.1 Packing

The material shall be suitably packed as agreed to between the purchaser and the supplier, in such a way so as not to spoil the material during transportation and storage.

Table 1 Requirements for Tannic Acid for Ink Industry

(*Clause 3.4 and 6.1*)

SI No.	Characteristic	Requirements	Methods of Test, Ref to Annex
(1)	(2)	(3)	(4)
i)	Tannic acid, percent by mass (on dry basis), <i>Min</i>	95.0	B
ii)	Loss on drying, percent by mass, <i>Max</i>	5.0	C
iii)	Sulphated ash, percent by mass, <i>Max</i>	0.05	D
iv)	Lead (as Pb), percent by mass, <i>Max</i>	0.001	E
v)	Gum and saccharides	Absent	F

4.2 Marking

Each package shall be marked with the following particulars:

- Name of the material,
- Indication of the source of manufacture,
- Net mass of the material,
- Batch No. or lot No. in code or otherwise, and
- Month and year of manufacture.

5 SAMPLING AND CRITERIA FOR CONFORMITY

Representative samples of the material shall be drawn and adjudged as prescribed in Annex G.

6 TESTS METHODS

6.1 Tests shall be conducted by the methods referred in col 4 of Table 1.

6.2 Quality of Reagents

Unless specified otherwise, pure chemicals and distilled water (*see* IS 1070 : 1977) shall be employed in the test.

NOTE — 'Pure chemical' shall mean chemicals that do not contain impurities which affect the results of analysis.

ANNEX A

(Clause 3.2)

IDENTIFICATION TEST

A-1 REAGENTS

A-1.1 Ferric Chloride Solution — 0.1 percent.

Dissolve 0.1 g of ferric chloride in 100 ml of water. Prepare fresh when required.

A-1.2 Gelatin or Albumin Solution — 1.0 percent.

A-1.3 Sulphuric Acid, Cone — (see IS 266 : 1977).

A-2 PROCEDURE

A-2.1 Test a solution of the material with ferric

chloride solution and examine for blue-black colour. Add a few drops of concentrated sulphuric acid and examine for the disappearance of the colour and formation of any yellowish-brown precipitate.

A-2.2 Test a solution of the material with gelatin or albumin solution and examine for any precipitate.

ANNEX B

[Table 1, Sl No. (i)]

DETERMINATION OF TANNIC ACID CONTENT

B-1 APPARATUS

B-1.1 Photoelectric Colorimeter

B-2 REAGENTS

B-2.1 Ammonium Acetate Solution — 10 percent (*m/v*).

B-2.2 Ferrous Tartarate Reagent

Dissolve 0.1 g of ferrous sulphate and 0.5 g of sodium potassium tartarate in 100 ml of water.

B-2.3 Standard Tannic Acid Solution

Dissolve 0.1 g of pure tannic acid in 100 ml of water. Each ml of this solution contains 0.001 g of tannic acid.

B-3 PROCEDURE

Dry the material in an oven maintained at $105 \pm 2^\circ\text{C}$ for one hour. Weigh accurately about 0.1 to 0.2 g of the dried material, dissolve it in water and dilute to 100 ml in a volumetric flask. Take 1 ml aliquot of the solution by means of a pipette into a 50-ml

beaker. Adjust the pH to 7 with ammonium acetate solution. Add 2 ml of ferrous tartarate reagent and transfer to a 50-ml volumetric flask, washing the beaker with water. Make up the volume to the mark and measure the intensity of the colour at 540 nm on photoelectric colorimeter.

B-3.1 Pipette out 1 ml of standard tannic acid solution into a beaker and develop the colour as in B-3 in a 50-ml volumetric flask. Measure the intensity of the colour at 540 nm on the colorimeter.

B-4 CALCULATION

$$\text{Tannic acid, percent by mass} = \frac{R_1}{R_2} \times \frac{10}{M}$$

where

R_1 = colour intensity obtained on colorimeter with the material;

R_2 = colour intensity with standard tannic acid solution; and

M = mass, in g, of the material taken for the test.

ANNEX C

[Table 1, Sl No. (ii)]

DETERMINATION OF LOSS ON DRYING

C-1 PROCEDURE

Dry in an oven for half an hour, a flat-bottomed glass dish, about 5 cm in diameter provided with a ground glass cover. Cool in a desiccator and weigh. Place a weighed quantity of the material in the dish, replace the cover and weigh. Uncover the dish and expose the material for two hours in the oven at $105 \pm 2^\circ\text{C}$. Remove the dish, replace the cover, cool in a desiccator and weigh. Repeat the operation till constant mass is obtained.

C-2 CALCULATION

Loss on drying percent by mass =

$$\frac{100 (M_1 - M_2)}{M_1}$$

where

M_1 = mass, in g, of the material taken for the test; and

M_2 = mass, in g, of the material after drying.

ANNEX D

[Table 1, Sl No. (iii)]

DETERMINATION OF SULPHATED ASH**D-1 PROCEDURE**

Ignite a 7-cm silica crucible in a muffle furnace, cool in a desiccator and weigh. Heat about 2 g of the material in the crucible and weigh accurately. Heat the crucible on a low flame until the material is completely carbonized. Burn off the carbonaceous matter by further heating in a muffle furnace. When the ash is practically white in colour, cool the crucible, add 5 drops of concentrated sulphuric acid and heat to fumes on a burner. When all the sulphuric acid has volatilized, cool the crucible in

a desiccator and weigh. Repeat the operation till constant mass is obtained.

D-2 CALCULATION

$$\text{Sulphated ash, percent by mass} = \frac{100 \times M_1}{M}$$

where

M_1 = mass, in g, of the ignited ash; and

M = mass, in g, of the material taken for the test.

ANNEX E

[Table 1, Sl No. (iv)]

DETERMINATION OF LEAD**E-1 APPARATUS**

E-1.1 Nessler Cylinders — 50-ml capacity.

E-2 REAGENTS

E-2.1 Acetic Acid — approximately 35 percent (v/v).

E-2.2 Dilute Ammonium Hydroxide — approximately 10 percent.

E-2.3 Potassium Cyanide Solution

Dissolve 10 g of potassium cyanide in 90 ml of water, add 2 ml of hydrogen peroxide (approximately 6 percent v/v), allow to stand for 24 hours and make up to 100 ml with water.

E-2.4 Standard Lead Solution

Dissolve 0.160 g of lead nitrate in water, add 1 ml of concentrated nitric acid and make up the solution to exactly 1 000 ml. Pipette out 10 ml of the solution and dilute again to exactly 100 ml with water. Each ml of this solution contains 0.01 mg of lead (as Pb).

E-2.5 Sodium Sulphide Solution — approximately 10 percent.

E-3 PROCEDURE

Weigh accurately about 2 g of the material into a beaker and dissolve in 30 ml of hot water. Add 5 ml of acetic acid and transfer to a Nessler cylinder. Make it alkaline to litmus by gradual addition of dilute ammonium hydroxide and add 1 ml of potassium cyanide solution. Add 2 drops of sodium sulphide solution and make up the volume to the mark with water. Stir thoroughly. Carry out another test without the sample in the other Nessler cylinder using the same quantities of other reagents in the same total volume of the reaction mixture and adding drop by drop standard lead solution, stirring thoroughly till the colour in the two cylinders exactly match each other.

NOTE — Filter both the solutions if they are turbid.

E-4 CALCULATION

$$\text{Lead (as Pb), percent by mass} = \frac{0.001 V}{M}$$

where

V = volume, in ml of standard lead solution required for matching; and

M = mass, in g, of the material taken for the test.

ANNEX F

[Table 1, Sl No. (v)]

TEST FOR SACCHARIDE AND GUM**F-1 PROCEDURE**

Weigh 2 g of the material, dissolve it in 10 ml of water and add 2 ml of rectified spirit. Examine

for the clarity of the solution after 24 hours. Add 1 ml of ether and again examine for the clarity of the solution after 24 hours.

ANNEX G
(Item 5)

SAMPLING OF TANNIC ACID FOR INK INDUSTRY

G-1 LOT

All the packages of tannic acid produced at a time under similar conditions of manufacture shall be grouped together to constitute a lot. Each lot shall be tested separately for various requirements of the specifications.

G-2 SCALE OF SAMPLING

The number of packages to be selected for sampling shall be as given in Table 2.

Table 2 Scale of Sampling

No. of Packages in the Lot	No. of Packages to be Selected
(1)	(2)
Up to 50	3
51 to 100	4
101 to 200	5
201 to 300	6
301 and above	7

These packages shall be selected at random from the lot, as per IS 4905 : 1968.

G-3 PREPARATION OF TEST SAMPLES

From each selected package, a representative portion of material shall be taken, which shall be sufficient for carrying out tests for all characteristics given in the specification.

G-3.1 Composite Sample

Out of these portions, a small but equal quantity of material shall be taken and mixed thoroughly to make a composite sample.

G-3.2 Individual Sample

The remaining portion of material from each selected container shall constitute an individual test sample.

G-4 NUMBER OF TESTS

Tests for description, identification solubility, and gallic acid content shall be performed on individual samples. The tests for all other characteristics shall be conducted on composite sample.

G-5 CRITERIA FOR CONFORMITY

The lot shall be deemed to conform to the specification if all the test results according to 4 satisfy the corresponding requirements.

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